

Revision of *Lerista frosti* and Allied Species (Lacertilia: Scincidae)

G.M. Storr*

Abstract

The name *Lerista frosti* Zietz is restricted to the species inhabiting the central Australian highlands. Three other species, formerly included in *L. frosti*, are described as new, viz. *L. flammicauda* and *L. chalybura* from the north-west of Western Australia, and *L. dorsalis* from southern South Australia and south-eastern Western Australia.

Introduction

All members of the *L. elegans* group having four fingers, four toes, movable eyelids, three supraoculars (first two in contact with frontal) and five supraciliaries (second and fifth smallest) were previously regarded as conspecific with *L. frosti* (Storr 1972). However, it has become evident that such lizards comprise four distinct species, two of them sympatric in the Hamersley Range of Western Australia. I do not treat these four species as a complex, for it is by no means clear that they constitute a natural group.

This revision is based on material in the Australian Museum (specimens prefixed with AM), Museum of Victoria (NMV), South Australian Museum (SAM) and Western Australian Museum (WAM). I am grateful to Dr A.E. Greer (AM), Mr A.J. Coventry (NMV) and Dr T.D. Schwaner (SAM) for the loan of specimens in their care.

Systematics

Key to Species

1. Ear aperture about twice as large as nostril; foreleg/hindleg ratio 0.56-0.69; inhabiting north-west of Western Australia 2
- Ear aperture smaller than nostril (occasionally as large); foreleg/hindleg ratio 0.33-0.56; inhabiting central Australia, South Australia and south-eastern Western Australia 3

* Department of Ornithology, Western Australian Museum, Francis Street, Perth, Western Australia 6000.

2. Tail orange-red; dark upper lateral stripe sharp-edged and more than one scale wide *flammicauda*
- Tail bluish or greyish; dark upper lateral stripe inferiorly ill-defined and less than one scale wide *chalybura*
3. Dorsal pattern weak or absent; under tail buff, spotted with brown; dark upper lateral stripe narrow and inferiorly ill-defined *frosti*
- Dorsal pattern of two or four dark stripes or lines of spots usually well developed; under tail pink, usually immaculate; black upper lateral stripe wide and sharply defined *dorsalis*

Lerista flammicauda sp. nov.

Holotype

R67895 in Western Australian Museum, collected by C. Dawe on 5 December 1979 at Marandoo, Western Australia, in 22°37'S, 118°08'E.

Paratype

North-West Division (W.A.)

Millstream (WAM R36152); 1 km N Crossing Pool, Millstream National Park (WAM R88833-4, 88836-8); Kookhabinna Gorge (WAM R25268).

Diagnosis

A small slender *Lerista* with four fingers, four toes, movable eyelids, large ear aperture (about twice as large as nostril), comparatively long foreleg (more than 6 mm long in adults and subadults), orange-red tail, and wide, sharply defined, dark upper lateral stripe.

Description

Snout-vent length (mm): 33-56 (N 8, mean 47.0). Length of appendages etc. (% SVL): foreleg 13-17 (N 7, mean 14.3); hindleg 22-24 (N 6, mean 22.5); tail 122-144 (N 2); snout to foreleg 27-33 (N 8, mean 29.4). Foreleg/hindleg ratio 0.57-0.64 (N 6, mean 0.61).

Nasals in short to long contact. Prefrontals widely separated. Frontoparietals in long contact. Supraoculars 3, first two in contact with frontal. Supraciliaries 5, second and last smallest. Upper labials 6 (N 7) or 7(1). Midbody scale rows 20 (N 7) or 22(1). Lamellae under third toe 13-16 (N 6, mean 15.2).

Head and back brown, unmarked. Tail above and below orange-red, densely dotted with dark brown. Sharp-edged blackish-brown upper lateral stripe; on body nearly one and a half scales wide; narrowing as it passes forward above ear

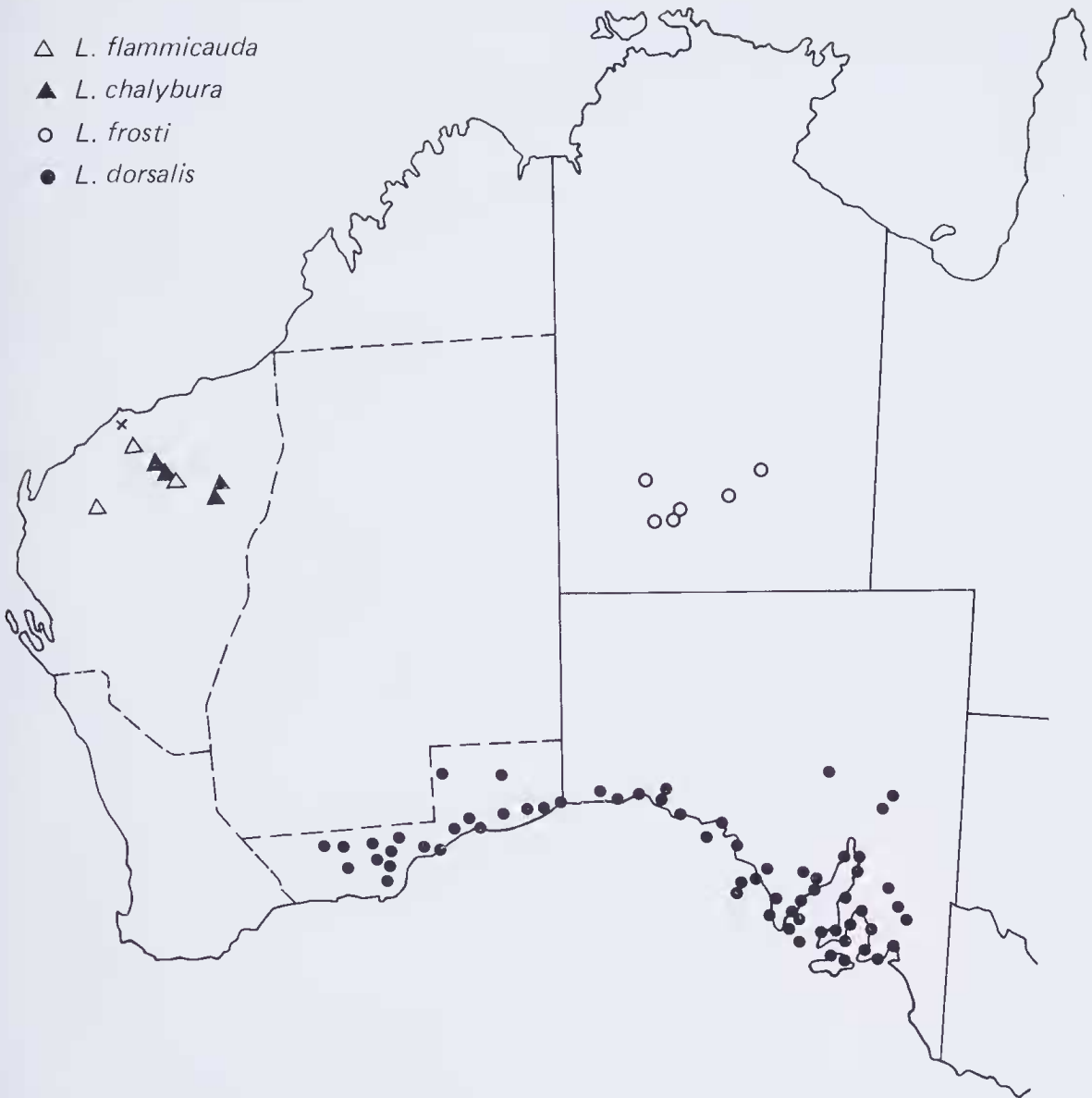


Figure 1 Map of Western Australia, Northern Territory and South Australia, showing location of specimens of *Lerista flammicauda*, *L. chalybura*, *L. frosti* and *L. dorsalis*. An x indicates the location of the strange specimen (WAM R70741) from the Maitland River.

aperture through orbit and lore to tip of snout. Side of body pale brown, scales edged dark brown (especially anteriorly); occasionally one or two longitudinal series of dark brown spots. Limbs pale brown, marked longitudinally with dark-brown spots or stripes.

Distribution

Hamersley and Barlee Ranges in arid north-west of Western Australia.

Derivation of Name

From Latin *flamma* (flame) + *cauda* (tail).

Lerista chalybura sp. nov.

Holotype

R73934 in Western Australian Museum, collected by L.A. Smith and R.E. Johnstone on 6 November 1981 at Weeli Wolli Spring, Western Australia, in 22°55'S, 119°12'E.

Paratypes

North-West Division (W.A.)

Wittenoom Gorge (AM R100608; WAM R37078); Hancock Gorge (WAM R37087, 69727-9, 88824-32); Knox Gorge (SAM R14594); Marillana (WAM R13287); Weeli Wolli Spring (WAM R73931-3).

Diagnosis

A small slender *Lerista* with four fingers, four toes, movable eyelids, large ear aperture (about twice as large as nostril), comparatively long foreleg (more than 6 mm long in adults and subadults), greyish or bluish tail, and narrow, inferiorly ill-defined, dark upper lateral stripe.

Description

Snout-vent length (mm): 30-54 (N 22, mean 45.1). Length of appendages (% SVL): foreleg 12-16 (N 22, mean 13.7); hindleg 19-25 (N 22, mean 21.9); tail 114-146 (N 5, mean 132.0); snout to foreleg 26-36 (N 22, mean 29.9). Foreleg/hindleg ratio 0.56-0.69 (N 22, mean 0.62).

Nasals narrowly separated (N 8) or in very short contact (14). Prefrontals widely separated. Frontoparietals in long contact. Supraoculars 3, first two in contact with frontal. Supraciliaries 5, second and last smallest. Upper labials 6. Midbody scale rows 20 (N 2) or 22 (N 2). Lamellae under third toe 14-18 (N 21, mean 15.8).

Head, back and base of tail brown (coppery brown in life), unmarked; rest of tail steel-grey to slaty blue, heavily spotted above and below with blackish-brown. Narrow blackish-brown upper lateral stripe, upper edge sharply defined, lower edge deeply notched or merging with lateral coloration. Side of body brown or dark brown gradually merging with paler venter; 0-5 longitudinal rows of indistinct blackish-brown spots. Under head and body whitish to pale brown, with or without dark brown spots. Limbs dark brown, mottled with pale brown. For coloration in life see photograph of '*L. frosti*' in Storr *et al.* (1981, pl. 13, no. 5).

Distribution

Hamersley Range in arid north-west of Western Australia with possibly a different population further north on the Pilbara coastal plain.

Remarks

A specimen (WAM R70741) from the Maitland River, 25 km S Karratha HS, is excluded from the type series. It has a shorter foreleg (10% of SVL and 50% of hindleg) and smaller ear aperture (only slightly larger than nostril) and differs in coloration (there are four longitudinal series of short dashes on the back, the upper lateral stripe is barely discernible, and the tail is concolorous with the back).

Derivation of Name

From Greek *chalyps* (steel) + *ura* (tail).

Lerista frosti Zietz

Figure 2

Lygosoma frosti Zietz, 1920; *Rec. S. Aust. Mus.* 1: 217.

Diagnosis

A small slender *Lerista* with four fingers, four toes, movable eyelids, small ear aperture (usually smaller than nostril, occasionally as large), comparatively short foreleg (less than 6 mm long), pale reddish-brown tail, and narrow, inferiorly ill-defined, dark upper lateral stripe.

Description

Snout-vent length (mm): 36-60 (N 31, mean 46.6). Length of appendages etc. (% SVL): foreleg 8-12 (N 31, mean 9.6); hindleg 16-25 (N 31, mean 20.3); tail 104-137 (N 23, mean 116.8); snout to foreleg 25-31 (N 30, mean 27.4). Foreleg/hindleg ratio 0.40-0.54 (N 31, mean 0.48).

Nasals narrowly separated (N 13) or in very short contact (18). Prefrontals widely separated. Frontoparietals in moderate to long contact (N 30) or fused (1). Supraoculars 3, first two in contact with frontal. Supraciliaries 5, second and last smallest. Upper labials 6. Midbody scale rows 20 (N 30) or 22(1). Lamellae under third toe 12-17 (N 31, mean 14.4).

Head and back pale olive-grey, greenish or pale reddish-brown; back with or without four longitudinal series of faint dots (rarely strong spots) or faint short dashes. Tail pale reddish-brown, spotted with blackish-brown. Blackish-brown upper lateral stripe often enclosing a series of pale spots; on body less than a scale wide, above sharp-edged and sometimes pale-margined, below notched or merging with lateral coloration; extending forward through orbit and lore to tip

of snout and narrowly back on to tail. Limbs, side of body and side of tail dark brown, mottled with pale brown. Under surfaces pale brown to brownish-white; ventrals and subcaudals edged or spotted with dark brown.

Distribution

Central Australian highlands from Mt Liebig and Mt Riddoch south to the George Gill Range and Tempe Downs.

Remarks

This species is remarkably similar in coloration to the Victoria River population of *Lerista orientalis* (DeVis).



Figure 2 A *Lerista frosti* from Alice Springs, photographed in life by G. Harold.

Material

Northern Territory

Mt Liebig (SAM R14592); 3 km WSW Mt Riddoch (SAM R16042); Wigley WH, Todd River (SAM R18492); 6 km N Alice Springs (AM R49301-2, 49540, 50541); near Alice Springs (AM R49749, 52043-4, 52046-7, 52130, 60107, 95746, 95749, 95761-7; NMV D5586; SAM R18722; WAM R74059); 51 km W Alice Springs (AM R87789); Palm Valley (AM R29629; WAM R20862-3); Reedy Rockhole, George Hill Range (AM R52045).

Lerista dorsalis sp. nov.

Figure 3

Holotype

R70018 in Western Australian Museum collected by G. Harold, P. Griffin and G. Barron on 4 April 1980 at 4 km E Eucla, Western Australia, in 31°40'S, 128°54'E.

Paratypes

For details of 458 specimens see under Material.

Diagnosis

A small slender to moderately large *Lerista* with four fingers, four toes, movable eyelids, small ear aperture (usually smaller than nostril, occasionally as large), comparatively short foreleg (usually less than 6 mm long), usually well-patterned back, lower surface of tail pink and usually immaculate, and wide, sharply defined, black upper lateral stripe.

Description

Snout-vent length (mm): 23-71 (N 459, mean 46.1). Length of appendages etc. (% SVL): foreleg 6-15 (N 423, mean 10.0); hindleg 17-28 (N 419, mean 22.5); tail 89-139 (N 141, mean 110.0); snout to foreleg 21-34 (N 425, mean 27.0). Foreleg/hindleg ratio 0.33-0.56 (N 419, mean 0.45).

Nasals narrowly separated (N 382) or in very short contact (32). Prefrontals widely separated. Frontoparietals in short to long contact (N 411), very narrowly separated (1) or wholly or partly fused (3). Supraoculars 3, first two in contact with frontal. Supraciliaries 5 with second and last smallest (N 403), 6(2) or 4(1). Upper labials 6 (N 426) or 7(8). Midbody scale rows 16 (N 5), 17(1), 18(359), 19(8), 20(23) or 22(1). Lamellae under third toe 12-21 (N 397, mean 16.1).

Upper surfaces pale olive-grey or pale olive-brown, usually more reddish on tail. Back and tail usually marked with 2 or 4 longitudinal black stripes or series of dots, short dashes or squarish spots. Wide, sharp-edged, black upper lateral stripe; on body covering at least half of two adjacent scale rows and often with a whitish margin above and below; extending narrowly forward through orbit to snout and back nearly to end of tail. Side of body greyish-white (rarely dark)



Figure 3 A *Lerista dorsalis* from Eucla, photographed in life by G. Harold.

with 0-3 (usually 2) grey longitudinal lines or series of dots. Limbs dark brown mottled with brownish-white. Under head and body whitish, ventrals usually edged with grey. Under tail pink, usually immaculate, sometimes spotted sparsely with brown.

Distribution

South-eastern Western Australia, north to the Nullarbor Plain (Seemore Downs, Loongana) and west to beyond Lake Dundas (Lake Gilmore), Dingo Rock and Junana Rock. Southern South Australia (including Kangaroo I. and many islands off Eyre Peninsula), north to the Nullarbor Plain (40 km N Colona), Roxby Downs and the Flinders Ranges, and east to the lower Murray (but excluding the Mt Lofty Ranges).

Geographic Variation

In the Flinders Ranges the dorsal pattern is frequently weak, and here alone the dominant midbody scale count is 20, one specimen even having 22. At Roxby Downs the tail is wholly pink. Specimens from the mainland of south-eastern Eyre

Peninsula and adjacent islands (from Winceby south to the South Neptunes) are much the largest; it is only here that SVL 60 mm is exceeded. Apart from these three populations there is little geographic variation; though specimens from east of Spencer Gulf tend to be less strongly patterned than those from further west.

Material

Eucla Division (W.A.)

Seemore Downs (WAM R18527-8); Loongana (WAM R29179); near Eucla (AM R54881, 67987-90, 100231-46, 100257, 105939; WAM R289-90, 24624-39, 31881-3, 64493-4, 66535-52, 66598, 66609-11, 66636-7, 66644-8); 10 km E Eucla (WAM R66860); Wilson Bluff (WAM R43797); 43 km WNW Eucla (WAM R36721), and 39 km WSW (WAM R66475), and 45 km WSW (WAM R33434); Mundrabilla (AM R90909, 100278, 105923; WAM R67265-8); Madura (AM R105891-4; WAM R29464), and 48 km E (WAM R66852-7), and 50 km E (AM R105911-2); Burnabbie (WAM R67229-30); Eyre (WAM R67306-7, 80990), and 13 km W (WAM R66998); Cocklebiddy (AM R100282-6, 105878, WAM R34488, 67241), and 10 km SSE (WAM R66944-9); Caiguna (AM R67991-8; SAM R17500), and 21 km E (WAM R66655), and 21 km S (WAM R66759-60), and 32 km W (SAM R23068), and 37 km W (WAM R66670-5), and 49 km W (AM R105858-9); Balladonia (NMV D641-2; WAM R17045-7, 29892); 8 km E Boingaring Rocks (WAM R58096); 9 km ENE Jindabinbin Rockhole (WAM R62307); Lake Gilmore (WAM R81851); Toolinna Cove (WAM R66782); Mullendunya Tank (WAM R45357); Coragina Rock (WAM R18514, 36183, 66841-3); 11 km E Dingo Rock (WAM R62281); 8 km ESE Mt Newmont (WAM R59834), and 32 km ESE (WAM R59828); 79 km SSW Balladonia Hotel (WAM R59749); Juranda Rockhole (WAM R18038); Junana Rock (WAM R36245); 'Israelite Bay' (WAM R14174); 'Mondrain I.' (WAM R10121).

South Australia

16 km E Wilson Bluff (AM R107923); Koomooloobooka Cave (AM R107940; SAM R6210-1); Yangoonabie Bore (SAM R13487); 43 km SE Koonalda (SAM R26467), and 48 km SE (SAM R26468); near Nullarbor IIS (SAM R20735, 26469-72); Head of Bight (NMV D7789); Yalata (SAM R19069); 40 km N Colona (SAM R13487); Fowlers Bay (AM R100162-216); near Ceduna (AM R67981-6, 87783, 87785-8, 87790-2; SAM R23014); Smoky Bay (WAM R24563-5); Masillon I. (SAM R12859); Streaky Bay (AM R100093, 100122-3); 10 km E Sceale Bay (SAM R22201); Mt Wedge (SAM R5735); Minnaroo Downs (SAM R14194); Waldegrave Is (SAM R11080-1); Elliston (AM R79714-6); Flinders I. (SAM R2485, 9508, 10222, 10226, 17225); Pearson Is (SAM R3372, 10223*a-c*, 10224, 10229, 10234*a-c*, 14096*a-c*, 15822); Mt Hope (AM R79733-4); Marble Range (SAM R17747); 7 km E Yangie Bay Well (SAM R16530); Lake Wangary (NMV D15363); Kellidie Bay (SAM R20734); Coffin Bay (SAM R17810, 18206-8, 20635); Greenly I. (SAM R2640, 23948); South Neptune Is (NMV D16368-70); Thistle I. (SAM R2546*a-b*); Lincoln National Park (SAM R23780); Cape Donington (SAM R22312); Port Lincoln (AM R79636-8, 79793; SAM R2554); Spilsby I. (AM R79705); Duffield I. (SAM R22679); Boucaut I. (SAM R22618); Roxby I. (SAM R21060-2); Reevesby I. (NMV D5310; SAM R12989*a-b*); Hareby I. (SAM R18310-1, 21461, 22750-5); Winceby I. (NMV D2139; SAM R18305-9); Tumby Bay (NMV D15364-9; WAM R27353-4); Port Neill (WAM R27324); Arno Bay (WAM R27315-6); 12 km E Cleve (SAM R11112); Carap-pee Hill (SAM R5751, 5759, 12921, 22210); Middleback Range (NMV D54207, 56700-1); Stony Point, near Whyalla (SAM R21063, 21068, 21079, 21853); Roxby Downs (SAM R20904, 20979, 20989-90); Ti-Tree Well, Flinders Ranges (SAM R16590); Arkaba (WAM R55736, 55767-71); Flinders Ranges (AM R19208-9); 7 km N Port Germein (SAM R10847); lower Broughton River (SAM R25181-2, 26133-4); Wallaroo (SAM R24709-10); Warooka

(SAM R24760); Corny Point (AM R79630); Edithburgh (SAM R12027); 5 km N Port Julia (SAM R12025-6); Tiddy Widdy Beach (SAM R16981a-b); Port Clinton (SAM R24386-7); near Port Wakefield (AM R105517); Port Prime (SAM R15039a-b); 8 km WNW Gawler (SAM R2582); Osborne (SAM R13373a-b); South Brighton (SAM R3131); Aldinga Beach (SAM R11283); Normanville (AM R81600-1); Waitpinga (AM R81635-6; SAM R15096); Goolwa (SAM R15921); north end of Younghusband Peninsula (SAM R21500-1); Langhorne Creek (SAM R15170); Box Flat, 25 km S Lamerloo (SAM R16178); Swan Reach (SAM R25915); Blanchetown (SAM R18521); Brookfield Conservation Park (SAM R14680, 18855); Mt Mary (SAM R26040); Burra (SAM R2751); Stokes Bay, Kangaroo I. (AM R79940, 79988-99, 81512-24); Nepean Bay, K.I. (AM R81577-81); American River, K.I. (SAM R14100); Whillock Point, K.I. (AM R79623).

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